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(54) **Cowling unit of motorcycle**

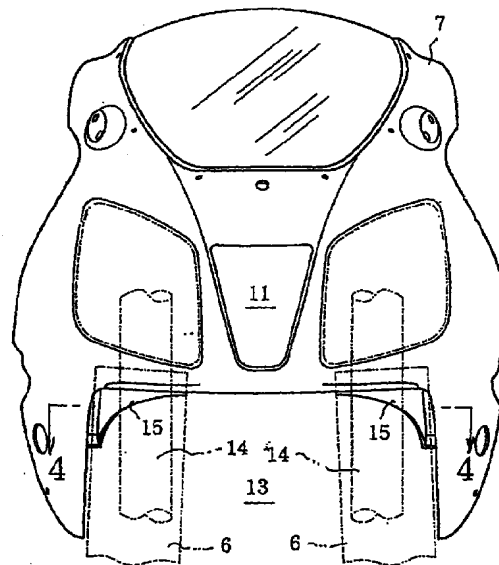
(57) **PROBLEM :**

It is the object of the present invention to increase the opening area of an air introducing opening without increasing running resistance.

SOLUTION :

An air introducing opening (13) is made at the front of an upper cowling (7), and side radiators (6) and front forks (14) are exposed to left and right sides behind the air introducing opening (13) when viewed from the front side. Air guide walls (15) overhanging the air introducing opening (13) from the left and right sides of a nose portion (10) and covering the front portion of the front forks (14) are integrally formed with the cowling (7) to guide running air to the side radiators (6).

Fig. 3



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Description

DETAILED DESCRIPTION OF THE INVENTION

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a cowling unit of a motorcycle having an air introducing opening at the front of a cowling and a radiator in the cowling behind the air introducing opening and, in particular, a cowling unit capable of reducing running resistance.

PRIOR ART

[0002] There is Japanese Utility Model Laid-Open No. S59-30781 as an example of the cowling unit like this. In this example, side radiators are arranged on both sides of a cowling and take air from an air introducing opening at the front of the cowling and discharges the air after cooling the side radiators outside a vehicle from air discharging ports overlapping the side radiators. Japanese Utility Model Laid-Open No. H4-52990 discloses an example in which air guide plates are arranged on both sides of the air introducing port of a cowling to guide air to a rider side.

PROBLEMS TO BE SOLVED BY THE INVENTION

[0003] In this connection, in the case of a radiator of the type introducing air from an air introducing opening to cool a radiator, in order to improve cooling efficiency, it is thought to increase the opening area of the air introducing opening. However, if the opening area of the air introducing opening is increased, members arranged behind the air introducing opening such as a front fork or the like are more exposed to air to the more increase running resistance. Accordingly, it is necessary to reduce the running resistance at the same time when the opening area of the air introducing opening is increased. It is difficult to ensure the clearance between the lower portion of the headlight and the front fender of the cowling and hence the shape of the cowling is also constrained. In this point, the circumstances are the same, to one degree or another, even in the case where a motorcycle is provided with side radiators. Therefore, it is the object of the present invention to reduce running resistance and to improve cooling efficiency.

MEANS FOR SOLVING PROBLEMS

[0004] In order to solve the above problem, a cowling unit of a motorcycle in accordance with the first aspect of the present invention is characterized in that, in the motorcycle comprising a cowling covering the front portion of a vehicle body and both sides of an engine and having an air introducing opening at its front portion and a radiator mounted in the cowling at the back of the air introducing opening, left and right air

guide walls overhanging the upper portion of the air introducing opening from left and right sides are mounted on the cowling to cover a pair of left and right front forks at their front portions.

[0005] The second aspect is characterized in that, according to the first aspect, the air guide walls guide running air toward the radiator. The third aspect is characterized in that, according to the second aspect, the radiator is a side radiator.

EFFECTS OF THE INVENTION

[0006] According to the first aspect, air guide walls overhanging the air introducing port and covering the front portion of the front forks are mounted on the left and right sides of the upper portion of the cowling and, hence, even if the air introducing opening is enlarged, the air guide walls can reduce the degree of exposure of the front forks to prevent an increase in running resistance. Accordingly, this cowling can prevent an increase in running resistance and enlarge the air introducing opening at the same time to improve cooling efficiency to the radiator.

[0007] According to the second aspect, since the air guide winds guide running air toward the radiator, they can further improve cooling efficiency. According to the third aspect, since the side radiator is provided, it can reduce the running resistance caused by the radiator. Accordingly, the opening area of the air introducing opening can be further enlarged to further improve cooling efficiency.

PREFERRED EMBODIMENTS OF THE INVENTION

[0008] One preferred embodiment of the present invention will be described below based on the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a side view of the front portion of the vehicle body of a motorcycle in accordance with the preferred embodiment.

FIG. 2 is a plan view of the front portion of the vehicle body of a motorcycle in accordance with the preferred embodiment.

FIG. 3 is a front view of a cowling.

FIG. 4 is a cross-sectional view taken on a line 4-4 in FIG. 3.

FIG. 5 is an illustration of another preferred embodiment in correspondence with FIG. 4.

[0010] FIG. 1 is a side view of the front portion of the vehicle body of a motorcycle in accordance with the preferred embodiment and FIG. 2 is a plan view of its main portion. FIG. 3 is a front view of a cowling and FIG.

4 is a cross-sectional view taken on a line 4-4 in FIG. 3.

[0011] This motorcycle includes a head box 1 also serving as an air intake passage, a pair of main frames 2 bifurcating and extending to the left and right sides, a fuel tank 3 supported on the main frames 2, an V-type 5 water-cooled 4-cycle engine 4 mounted under the main frames 2, an air cleaner 5 arranged between the left and right main frames 2 and between the fuel tank 3 and the engine 4, and side radiators 6 which are mounted on both sides of the engine 4 with their cooling faces 10 erected vertically in parallel to the back-and-forth direction of a vehicle body and are supported by the main frames 2.

[0012] Further, the motorcycle is provided with a cowl 7 covering both sides of the side radiators 6 and the engine 4 and the front portion of the vehicle body, and the cowl 7 is fixed, with a bolt 9, to an air intake duct 8 made of resin and extending forward from the head box 1 in the front center of an upper cowl 7 constituting the front portion of the cowl. The upper cowl 20 7, as shown in FIG. 3, is formed into a nose portion 10 greatly bulging forward at the front of the head box 1 and has an air intake 11 made in the center and communicating with the air intake duct 8, a pair of openings made on both the left and right sides of the air intake 11, and headlights 12 built in the openings.

[0013] Under the nose portion 10 is made an air introducing opening 13 having a large opening area through which parts of the side radiators 6 and left and right front forks 14, both of which are provided in the upper cowl 7, can be seen from the front side. A pair of air guide walls 15 overhanging the left and right sides of the upper end portion of the air introducing opening 13 from both left and right end portions of the nose portion 10 facing the air introducing opening 13 are integrally formed with the upper cowl 7.

[0014] As shown in FIG. 3, each of the air guide walls 15 is shaped like a letter S and covers the front side of the front fork 14, and the left and right air guide walls 15 are inclined forward such that they get close to each other and overlap the portions of the side radiators 6 when viewed from the front side. The left and right air guide walls 15 are separated from each other and it is good enough that each of the air guide walls 15 is mounted before the side radiator 6 and the front fork 14 at the position where the side radiator 6 overlaps the front fork 14 and nothing is formed between the air guide wall 15. The air guide wall 15 has a smooth curved surface designed to make running air a laminar flow and to guide it to the side radiator 6.

[0015] Next, the action of the present preferred embodiment will be described. In FIG. 4, running air W is made a laminar flow by the surface of the air guide wall 15 and bypasses the front fork 14 arranged behind the air guide wall 15 and smoothly flows rearward. This can reduce the degree of exposure of the front forks 14 and running resistance and, therefore, can increase the opening area of the air introducing opening 13 without

increasing the running resistance to improve cooling efficiency.

[0016] Further, since the running air W made the laminar flow by the air guide walls 15 is guided toward the side radiators 6 arranged rearward (see FIG. 3), it can effectively cool the side radiators 6. For this reason, since the side radiators 6 inherently having small running resistance are used and hence the running resistance can be further reduced by the air guide walls 15, the flexibility of the layout of the vehicle body can be increased. Furthermore, the air guide wall 15 is not provided at the center of the air introducing opening 13 which does not contribute to a reduction in the running resistance of the front forks 14, which contributes to the increased opening area of the air introducing opening 13.

[0017] FIG. 5 shows the illustrations of other preferred embodiments related to the shape of the air guide wall 15 in correspondence with FIG. 4. First, in an example shown in A, the air guide wall 15 is shaped like a letter V facing forward. According to this example, the air guide wind 15 forms a smooth curved surface and hence can further increase the effect of laminar flow.

[0018] In an example B, the air guide wall 15 is shaped like an arrow projecting forward and can reduce also the running resistance of the air guide wall 15 itself. In an example C, the left and right air guide walls 15 are connected to each other to form a single curved air guide wall bulging forward and, when the opening area of the air introducing opening 13 can be sufficiently ensured, the air guide wall 15 is effective to further increase the amount of air introduced into the side radiators 6.

[0019] In this connection, in the above preferred embodiments, the same reference characters designate the same parts or portions in the previous preferred embodiment and the constitution other than the above-described constitution is common to both preferred embodiments.

DESCRIPTION OF THE REFERENCE CHARACTERS

[0020]

1: head box, 2: main frame, 3: fuel tank, 4: engine, 5: air cleaner, 6: side radiator, 7: cowl, 10: bulging part, 13: air introducing opening, 14: front fork, 15: air guide wall.

[0021] In summary, it is the object of the present invention to increase the opening area of an air introducing opening without increasing running resistance.

[0022] An air introducing opening is made at the front of an upper cowl, and side radiators and front forks are exposed to left and right sides behind the air introducing opening when viewed from the front side. Air guide walls overhanging the air introducing opening from the left and right sides of a nose portion and cover-

ing the front portion of the front forks are integrally formed with the cowling to guide running air to the side radiators.

Claims

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1. A cowling unit of a motorcycle comprising: a cowl-
ing (7) covering the front portion of a vehicle body
and both sides of an engine (4) and having an air
introducing opening (13) at its front portion; and a 10
radiator (6) mounted in the cowling at the back of
the air introducing opening (13), characterized in
that left and right air guide walls (15) overhanging
the upper portion of the air introducing openings 15
(13) from left and right sides are mounted on the
cowling (7) to cover a pair of left and right front forks
(14) at their front portions.
2. A cowling unit of a motorcycle as claimed in claim 1,
wherein the air guide walls (15) guide running air 20
toward the radiator (6).
3. A cowling unit of a motorcycle as claimed in claim 2,
wherein the radiator (6) is a side radiator.

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Fig. 1

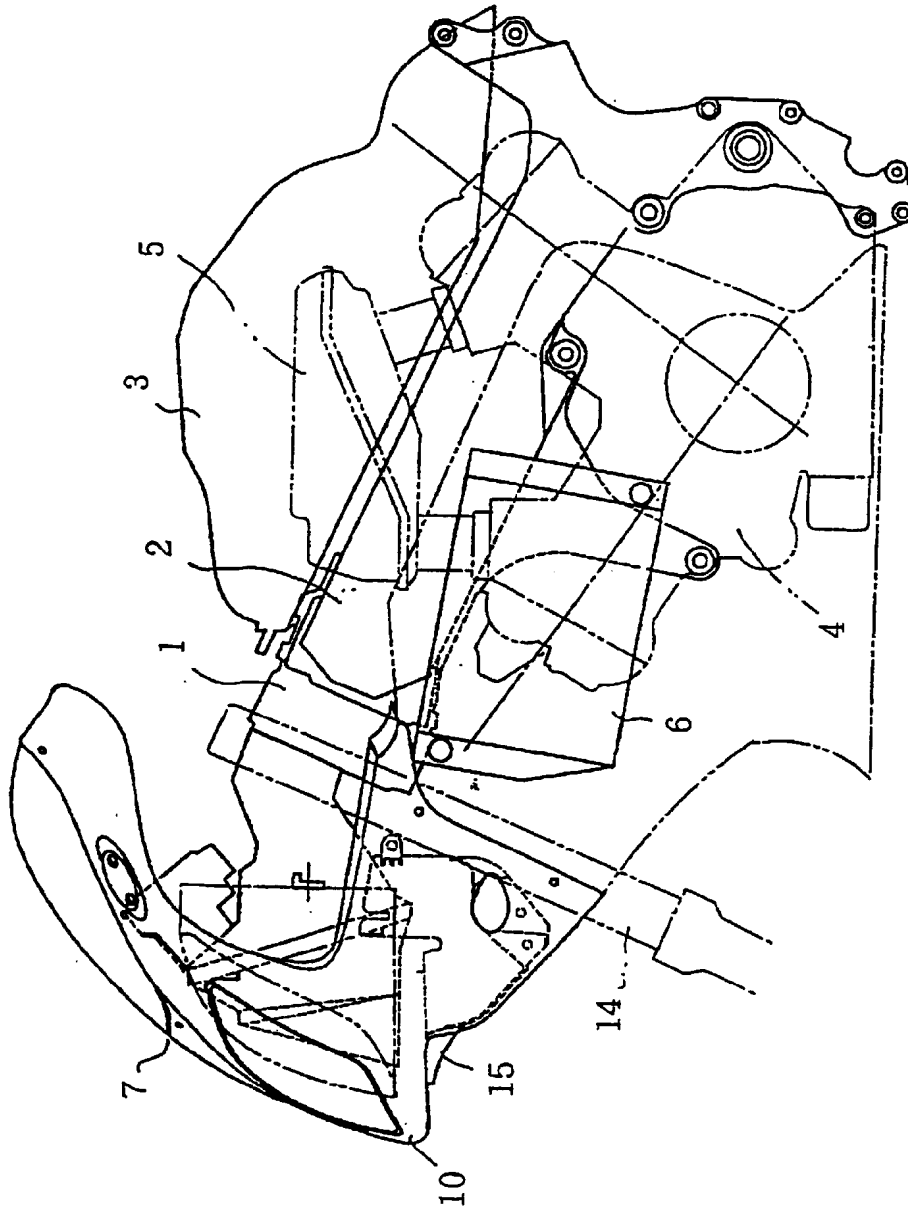


Fig. 2

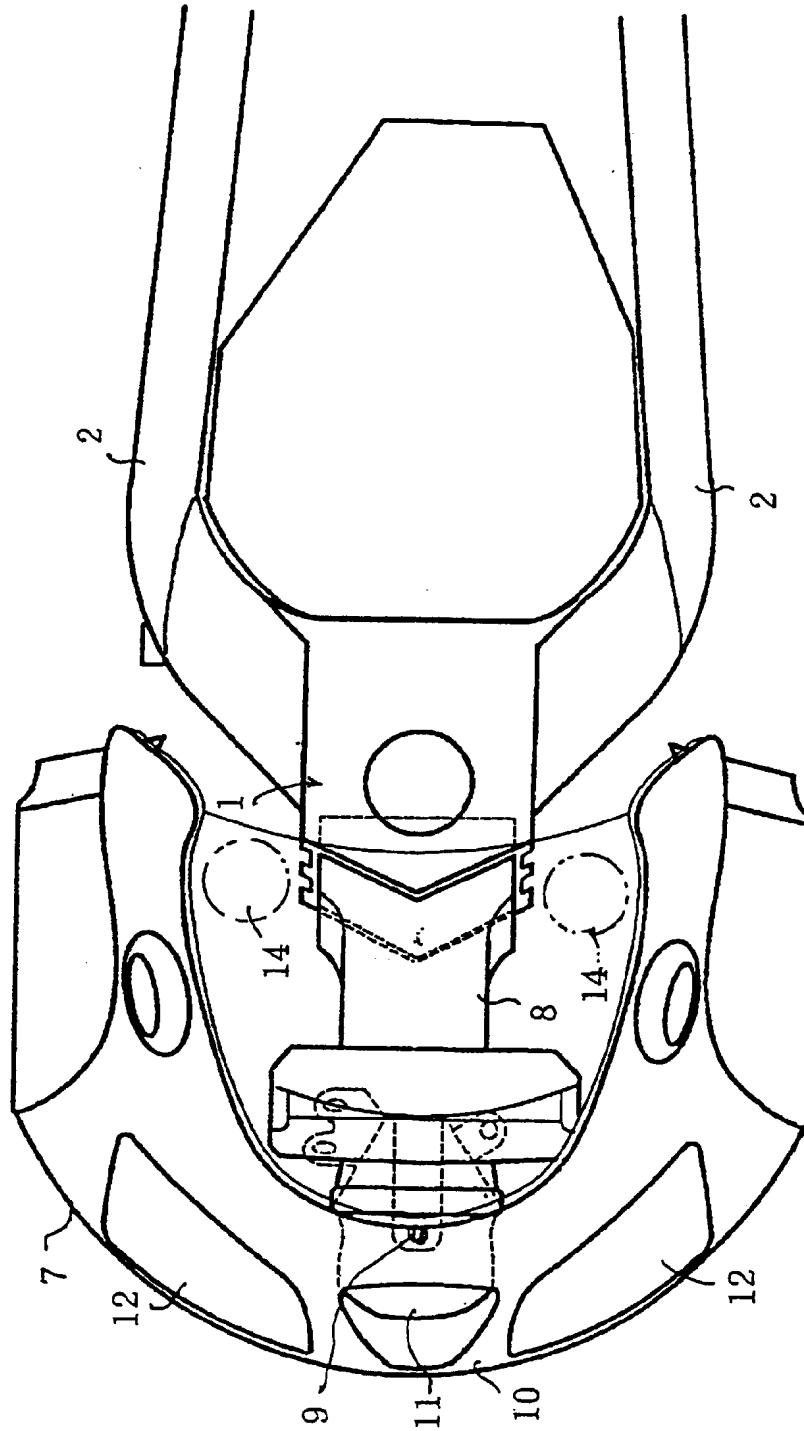


Fig. 3

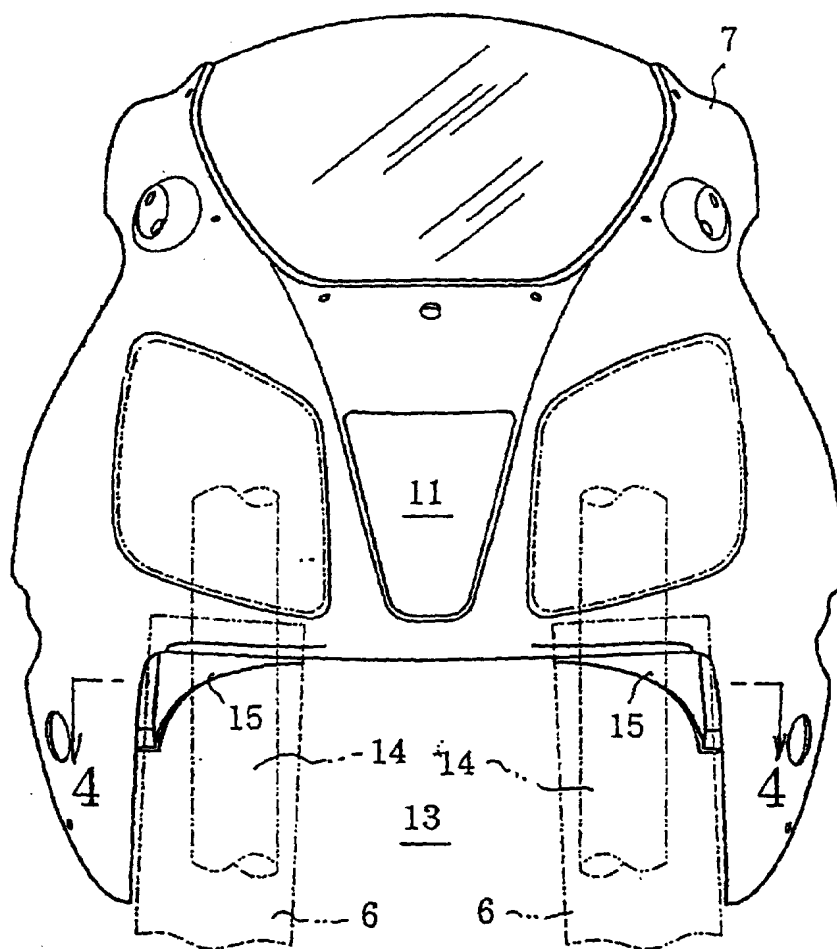


Fig. 4

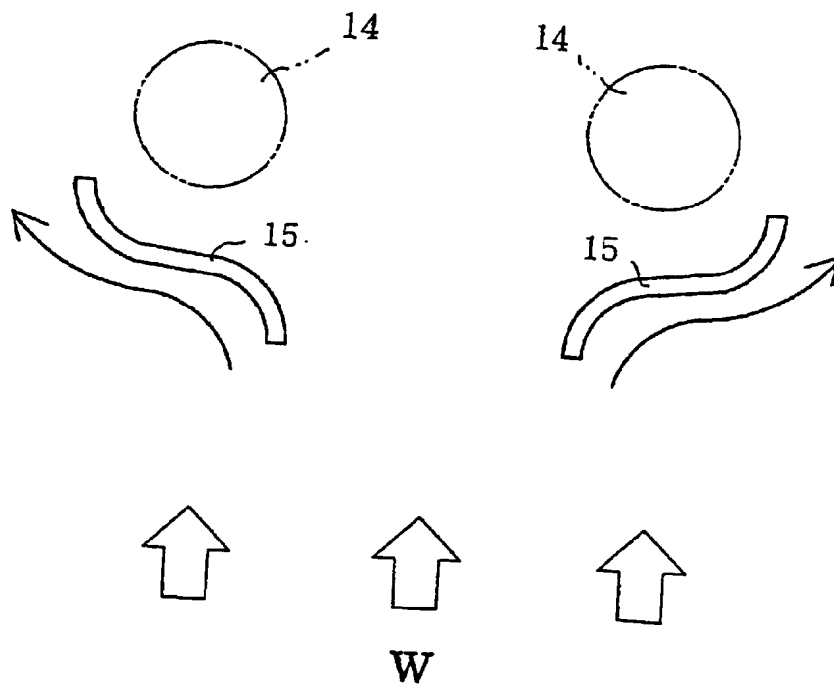


Fig. 5

